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Patent Claims

WHAT IS CLAIMED IS:

1. Polypeptide which exerts the biological activity of a GABA B receptor and which comprises an amino acid sequence which has at least 70% identity with a sequence of SEQ ID NO: 2, SEQ ID NO: 4 or SEQ ID NO: 6.
2. Polypeptide according to Claim 1, characterized in that the amino acid sequence corresponds to a sequence of SEQ ID NO: 2, SEQ ID NO: 4 or SEQ ID NO: 6.
3. Nucleic acid comprising a nucleotide sequence which encodes a polypeptide according to Claim 1.
4. Nucleic acid according to Claim 3, characterized in that it is single- or double-stranded DNA or RNA.
5. Nucleic acid according to Claim 4, characterized in that it is a fragment of genomic DNA or cDNA.
6. Nucleic acid according to Claim 3, characterized in that the nucleotide sequence corresponds to a sequence of SEQ ID NO: 1, SEQ ID NO: 3 or SEQ ID NO: 5.
7. Nucleic acid according to Claim 3, characterized in that it hybridizes under stringent conditions to the sequences of SEQ ID NO: 1, SEQ ID NO: 3 or SEQ ID NO: 5.
8. DNA construct comprising a nucleic acid according to any of Claims 3 to 7 and a heterologous promoter.

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9. Vector comprising a nucleic acid according to any of Claims 3 to 7 or a DNA construct according to Claim 8.

10. A vector according to Claim 9, characterized in that the nucleic acid is operatively linked to regulatory sequences which ensure the expression of the nucleic acid in pro- or eukaryotic cells.

11. Host cell containing a nucleic acid according to any of Claims 3 to 7, a DNA construct according to Claim 8 or a vector according to Claim 9 or 10.

12. Host cell according to Claim 11, which is a prokaryotic cell, in particular E. coli.

13. Host cell according to Claim 11, which is a eukaryotic cell, in particular a mammalian or insect cell.

14. Antibody which binds specifically to a polypeptide according to Claim 1.

15. Transgenic invertebrate containing a nucleic acid according to any of Claims 3 to 7.

16. Transgenic invertebrate according to Claim 15, which is *Drosophila melanogaster* or *Caenorhabditis elegans*.

17. Transgenic progeny of an invertebrate according to Claim 15 or 16.

18. Method of generating a polypeptide according to Claim 1, comprising

(a) culturing a host cell according to any of Claims 11 to 13 under conditions which ensure the expression of the nucleic acid according to any of Claims 3 to 7, or

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(b) expressing a nucleic acid according to any of Claims 3 to 7 in an in-vitro system, and

(c) obtaining the polypeptide from the cell, the culture medium or the in-vitro system.

19. Method of generating a nucleic acid according to any of Claims 3 to 7, comprising the following steps:

(a) full chemical synthesis in a manner known per se, or

(b) chemical synthesis of oligonucleotides, labelling of the oligonucleotides, hybridizing the oligonucleotides to DNA of a genomic library or cDNA library generated from insect genomic DNA or insect mRNA, respectively, selecting positive clones and isolating the hybridizing DNA from positive clones, or

(c) chemical synthesis of oligonucleotides and amplification of the target DNA by means of PCR.

20. Method of generating a transgenic invertebrate according to Claim 15 or 16, which comprises introducing a nucleic acid according to any of Claims 3 to 7 or a vector of Claim 9 or 10.

21. Method of finding new active compounds for crop protection, in particular compounds which alter the properties of polypeptides according to Claim 1, comprising the following steps:

(a) providing a host cell according to any of Claims 11 to 13,

(b) culturing the host cell in the presence of a chemical or of a sample comprising a multiplicity of chemicals, and

(c) detecting altered properties.

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22. A method of finding a chemical which binds to a polypeptide according to Claim 1, comprising the following steps:

(a) contacting a polypeptide according to Claim 1 or a host cell according to any of Claims 11 to 13 with a chemical or a mixture of chemicals under conditions which permit the interaction of a chemical with the polypeptide, and

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(b) determining the chemical which binds specifically to the polypeptide.

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23. Method of finding a chemical which alters the expression of a polypeptide according to Claim 1, comprising the following steps:

(a) contacting a host cell according to any of Claims 11 to 13 or a transgenic invertebrate according to Claim 15 or 16 with a chemical or a mixture of chemicals,

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(b) determining the concentration of the polypeptide according to Claim 1, and

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(c) determining the chemical which specifically affects the expression of the polypeptide.

24. Use of a polypeptide according to Claim 1, of a nucleic acid according to any of Claims 3 to 7, of a vector according to Claim 9 or 10, of a host cell according to any of Claims 11 to 13, of an antibody according to Claim 14 or

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of a transgenic invertebrate according to Claim 15 or 16 for finding new active compounds for crop protection or for finding genes which encode polypeptides which participate in the synthesis of functionally similar GABA B receptors in insects,

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25. Use of a modulator of a polypeptide according to Claim 1 as insecticide.

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